

CLAIMS

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1. Process for the selective separation of iron present in a solution in the presence of other metal ions, including vanadium, characterized in that it consists in treating the solution with an ion-exchange resin comprising diphosphonic acid groups.
  - 5 2. Process according to claim 1, characterized in that the ion-exchange resin comprises sulphonic groups.
  3. Process according to claim 1 or 2, characterized in that the solution comprising the metal ions is at a pH of less than 3.
  4. Process according to one of the preceding claims, characterized in that the
  - 10 abovementioned solution results from a process for the oxidation of organic compounds in the presence of a catalyst.
  5. Process for the recycling of a catalyst in a reaction for the oxidation of an organic compound in the presence of a catalyst comprising metal elements, characterized in that it consists in treating the solution comprising the catalyst, after separation of at least the
  - 15 compounds resulting from the oxidation, with an ion-exchange resin comprising diphosphonic acid groups, in order to fix the iron present in the said solution, and in recycling the said solution, depleted in iron, as catalytic solution for the oxidation reaction.
  6. Process according to claim 5, characterized in that the ion-exchange resin comprises sulphonic groups.
  - 20 7. Process according to claim 5 or 6, characterized in that the oxidation reaction is carried out while using, as oxidizing agent, a compound chosen from the group consisting of oxygen, air, peroxides, aqueous hydrogen peroxide solution and nitric acid.
  8. Process according to one of claims 5 to 7, characterized in that the oxidation reaction is the reaction for the oxidation of alcohols and/or ketones to carboxylic acids.
  - 25 9. Process for the manufacture of adipic acid by oxidation of cyclohexanol and/or cyclohexanone in the presence of a catalyst based on metal elements, characterized in that it consists in treating the solution resulting from the oxidation comprising the catalyst, after

separation of the adipic acid formed, with at least one ion-exchange resin comprising diphosphonic groups, in order to deplete the said solution in iron ions, and in reusing the said solution, depleted in iron, as catalyst for the oxidation reaction.

10. Process according to claim 9, characterized in that the oxidation catalyst is based on copper and vanadium.

11. Process according to claim ~~9~~ or 10, characterized in that the solution comprising the catalyst is a nitric solution from the elution of an ion-exchange resin which makes it possible to separate the metal ions from the carboxylic acid byproducts from the reaction for the oxidation of cyclohexanol and/or cyclohexanone to adipic acid.

12. Process according to one of claims 9 to 11, characterized in that the ion-exchange resin comprising diphosphonic acid groups is regenerated with an acidic solution.

13. Process according to claim 12, characterized in that the regeneration of the resin is carried out with a different acid from nitric acid and the said regenerated resin is conditioned with a nitric acid solution or by washing with water before a fresh use.